

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Listing of Claims

Claim 1 (currently amended): A sheet of a copper alloy having a high-mechanical strength, the copper alloy consisting of ~~comprising~~ 3.5 to 4.5% by mass of Ni, 0.7 to 1.0% by mass of Si, 0.01 to 0.20% by mass of Mg, 0.05 to 1.5% by mass of Sn, 0.2 to 1.5% by mass of Zn, and less than 0.005% by mass (including 0% by mass) of S, optionally 0.01 to 0.5% by mass at a total content of at least one selected from the group consisting of B, Fe, Zr, P, Mn, Ti, V, Pb, Bi and Al, and optionally 0.005 to 2.0% by mass at a total amount of at least one selected from the group consisting of Ag, Co and Cr, with the balance being made of Cu and inevitable impurities, wherein the alloy has a tensile strength of 800 N/mm² or more, and wherein the alloy has a stress relaxation ratio of 10% or less when the alloy is maintained at a temperature of 150°C for a period of 1000 hours.

Claim 2 (currently amended): A sheet according to claim 1, wherein ~~the copper alloy includes~~ a crystal grain of the copper alloy has ~~having~~ a diameter from more than 0.001 mm to 0.025 mm.

Amendment
Serial No. 10/602,646
Attorney Docket No. 020960A

Claim 3 (original): A sheet according to claim 2, wherein the copper alloy has a ratio (a/b), between a longer diameter a of a crystal grain on a cross section parallel to a direction of final plastic working, and a longer diameter b of a crystal grain on a cross section perpendicular to the direction of final plastic working, of 1.5 or less,

Claim 4 (original): A sheet according to claim 3, wherein the ratio (a/b) is 0.8 or more.

Claim 5 (currently amended): A sheet according to claim 1, ~~wherein the copper alloy~~ further comprising S is included at a content of less than 0.002% by mass.

Claim 6 (cancelled)

Claim 7 (cancelled)

Claim 8 (currently amended): A sheet according to claim 1, ~~wherein the copper alloy~~ further comprising Ag is included at an amount of 0.005 to 0.3% by mass.

Claim 9 (currently amended): A sheet according to claim 1, ~~wherein the copper alloy~~ further comprising Co is included at an amount of 0.005 to 2.0% by mass.

Claim 10 (currently amended): A sheet according to claim 1, ~~wherein the copper alloy~~
~~further comprising Cr [[,]]~~ is included at an amount of 0.005 to 0.2% by mass.

Claim 11 (original): A sheet according to claim 1, wherein the copper alloy is overaged.

Claim 12 (original): A sheet according to claim 1,
wherein the copper alloy, when the alloy is subjected to an aging treatment, shows a
maximum peak of the tensile strength at a peak temperature of 350 to 600°C; and
wherein the alloy is overaged at a temperature between the peak temperature and 50°C
above the peak temperature.

Claim 13 (currently amended): A sheet of a copper alloy having a high-mechanical
strength, the copper alloy ~~consisting of~~ ~~comprising~~ 3.0 to 4.5% by mass of Ni, 0.65 to 1.0% by
mass of Si, 0.01 to 0.20% by mass of Mg, 0.05 to 1.5% by mass of Sn, 0.2 to 1.5% by mass of Zn,
and less than 0.005% by mass (including 0% by mass) of S, optionally 0.01 to 0.5% by mass at a
total content of at least one selected from the group consisting of B, Fe, Zr, P, Mn, Ti, V, Pb, Bi
and Al, and optionally 0.005 to 2.0% by mass at a total amount of at least one selected from the
group consisting of Ag, Co and Cr, with the balance being made of Cu and inevitable impurities,
wherein the alloy has a tensile strength of 800 N/mm² or more, and

Amendment
Serial No. 10/602,646
Attorney Docket No. 020960A

wherein the alloy has a stress relaxation ratio of 10% or less when the alloy is maintained at a temperature of 150°C for a period of 1000 hours.

Claim 14 (currently amended): A sheet according to claim 13, wherein ~~the copper alloy includes a crystal grain of the copper alloy has~~ having a diameter from more than 0.001 mm to 0.025 mm.

Claim 15 (original): A sheet according to claim 13, wherein the copper alloy has a ratio (a/b), between a longer diameter a of a crystal grain on a cross section parallel to a direction of final plastic working, and a longer diameter b of a crystal grain on a cross section perpendicular to the direction of final plastic working, of 1.5 or less,

Claim 16 (original): A sheet according to claim 13, wherein the ratio (a/b) is 0.8 or more.

Claim 17 (currently amended): A sheet according to claim 13, wherein the copper alloy further comprising S is included at a content of less than 0.002% by mass.

Claim 18 (cancelled)

Amendment
Serial No. 10/602,646
Attorney Docket No. 020960A

Claim 19 (cancelled)

Claim 20 (currently amended): A sheet according to claim 13, wherein the copper alloy
~~further comprising~~ Ag is included at an amount of 0.005 to 0.3% by mass.

Claim 21 (currently amended): A sheet according to claim 13, wherein the copper alloy
~~further comprising~~ Co is included at an amount of 0.005 to 2.0% by mass.

Claim 22 (currently amended): A sheet according to claim 13, wherein the copper alloy
~~further comprising~~ Cr is included at an amount of 0.005 to 0.2% by mass.

Claim 23 (original): A sheet according to claim 13, wherein the copper alloy is overaged.

Claim 24 (original): A sheet according to claim 1,
wherein the copper alloy, when the alloy is subjected to an aging treatment, shows a
maximum peak of the tensile strength at a peak temperature of 350 to 600°C; and
wherein the alloy is overaged at a between the peak temperature and 50°C above the
peak temperature.

Claim 25 (currently amended): A sheet of a copper alloy having a high-mechanical strength, the copper alloy ~~consisting of~~ comprising 3.0 to 4.5% by mass of Ni, 0.65 to 1.0% by mass of Si, 0.01 to 0.20% by mass of Mg, 0.05 to 1.5% by mass of Sn, 0.2 to 1.5% by mass of Zn, and less than 0.005% by mass (including 0% by mass) of S, optionally 0.01 to 0.5% by mass at a total content of at least one selected from the group consisting of B, Fe, Zr, P, Mn, Ti, V, Pb, Bi and Al, and optionally 0.005 to 2.0% by mass at a total amount of at least one selected from the group consisting of Ag, Co and Cr, with the balance being made of Cu and inevitable impurities,

wherein the copper alloy, when the alloy is subjected to an aging treatment, shows a maximum peak of the tensile strength at a peak temperature of 350 to 600°C; and

wherein the alloy is overaged at a between the peak temperature and 50°C above the peak temperature,

wherein the alloy has a stress relaxation ratio of 10% or less when the alloy is maintained at a temperature of 150°C for a period of 1000 hours.

Claim 26 (currently amended): A sheet according to claim 25, wherein ~~the copper alloy includes~~ a crystal grain of the copper alloy has ~~having~~ a diameter from more than 0.001 mm to 0.025 mm.

Claim 27 (original): A sheet according to claim 25, wherein the copper alloy has a ratio (a/b), between a longer diameter a of a crystal grain on a cross section parallel to a direction of

Amendment
Serial No. 10/602,646
Attorney Docket No. 020960A

final plastic working, and a longer diameter b of a crystal grain on a cross section perpendicular to the direction of final plastic working, of 1.5 or less,

Claim 28 (original): A sheet according to claim 25, wherein the ratio (a/b) is 0.8 or more.

Claim 29 (currently amended): A sheet according to claim 25, wherein the copper alloy
~~further comprising~~ S is included at a content of less than 0.002% by mass.

Claim 30 (cancelled)

Claim 31 (cancelled)

Claim 32 (currently amended): A sheet according to claim 25, ~~the copper alloy further~~
~~comprising~~ Ag is included at an amount of 0.005 to 0.3% by mass.

Claim 33 (currently amended): A sheet according to claim 25, wherein the copper alloy
~~further comprising~~ Co is included at an amount of 0.005 to 2.0% by mass.

Claim 34 (currently amended): A sheet according to claim 25, wherein the copper alloy
~~further comprising~~ Cr is included at an amount of 0.005 to 0.2% by mass.

Claim 35 (cancelled)

Claim 36 (original): A sheet according to claim 25, wherein the alloy has a tensile strength of 800 N/mm² or more.

Claim 37 (currently amended): A sheet of a copper alloy having a high-mechanical strength, the copper alloy consisting of ~~comprising~~ 1.0 to 4.5% by mass of Ni, 0.2 to 1.0% by mass of Si, 0.01 to 0.20% by mass of Mg, 0.05 to 1.5% by mass of Sn, 0.2 to 1.5% by mass of Zn, and less than 0.005% by mass (including 0% by mass) of S, optionally 0.01 to 0.5% by mass at a total content of at least one selected from the group consisting of B, Fe, Zr, P, Mn, Ti, V, Pb, Bi and Al, and optionally 0.005 to 2.0% by mass at a total amount of at least one selected from the group consisting of Ag, Co and Cr, with the balance being made of Cu and inevitable impurities,

wherein the copper alloy, when the alloy is subjected to an aging treatment, shows a maximum peak of the tensile strength at a peak temperature of 350 to 600°C; and

wherein the alloy is overaged at a between the peak temperature and 50°C above the peak temperature,

wherein the alloy has a stress relaxation ratio of 10% or less when the alloy is maintained at a temperature of 150°C for a period of 1000 hours.

Amendment
Serial No. 10/602,646
Attorney Docket No. 020960A

Claim 38 (currently amended): A sheet according to claim 37, wherein a crystal grain of the copper alloy ~~has~~ includes a crystal grain having a diameter from more than 0.001 mm to 0.025 mm.

Claim 39 (currently amended): A sheet according to claim 37, wherein the copper alloy has a ratio (a/b), between a longer diameter a of a crystal grain on a cross section parallel to a direction of final plastic working, and a longer diameter b of a crystal grain on a cross section perpendicular to the direction of final plastic working, of 1.5 or less. [[,]]

Claim 40 (original): A sheet according to claim 37, wherein the ratio (a/b) is 0.8 or more.

Claim 41 (currently amended): A sheet according to claim 37, wherein the copper alloy ~~further comprising S~~ is included at a content of less than 0.002% by mass.

Claim 42 (cancelled)

Claim 43 (cancelled)

Claim 44 (currently amended): A sheet according to claim 37, wherein the copper ~~alloy further comprising Ag~~ is included at an amount of 0.005 to 0.3% by mass.

Amendment
Serial No. 10/602,646
Attorney Docket No. 020960A

Claim 45 (currently amended): A sheet according to claim 37, wherein the copper alloy
~~further comprising~~ Co is included at an amount of 0.005 to 2.0% by mass.

Claim 46 (currently amended): A sheet according to claim 37, wherein the copper alloy
~~further comprising~~ Cr [[,]] is included at an amount of 0.005 to 0.2% by mass.

Claim 47 (cancelled)

Claim 48 (original): A sheet according to claim 37, wherein the alloy has a tensile
strength of 800 N/mm² or more.